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# HEWLETT-PACKARD

**Preparing for Your HP 260**

The logo features the text "HP 260" in a bold, sans-serif font. The "HP" is positioned above the "260". The entire logo is set against a background of two thick, parallel diagonal stripes that run from the bottom-left towards the top-right. The stripes are black with a thin white line between them. The "260" is partially overlaid by these stripes.

**HP**

**260**

**HP 260 Computer Systems**

# **PREPARING FOR YOUR HP 260**

**User's Manual**



HERRENBERGER STRASSE 130, D-7030 BOEBLINGEN

# **FEDERAL COMMUNICATION COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT**

(for U.S. A only)

This equipment generates and radiates radio frequency energy. If not installed and used as directed in the system's documentation, the system may cause interference o radio communications.

The system has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference. Should this occur, the user must at his own expense take whateer measuers may be required to correct the interference.

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# PRINTING HISTORY

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

The software code printed alongside the date indicates the version level of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one to one correspondence between product updates and manual updates.

First Edition . . . . . Feb 1985. . . . . B.07.00

# LIST OF EFFECTIVE PAGES

The List of Effective Pages gives the date of the most recent version of each page in the manual. To verify that your manual contains the most current information, check the dates printed at the bottom of each page with those listed below. The date on the bottom of each page reflects the edition or subsequent update in which that page was printed.

Effective Pages	Date
all . . . . .	Feb 1985

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#### APPENDIX A

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This manual will help you in planning and preparing for the installation of your HP 260. The information and specifications will help you decide where to locate the system, how to prepare the environment, and what to do when you receive your system.

## **CUSTOMER RESPONSIBILITIES**

### **Space and Environment**

The HP 260 system has been designed for the small-business environment, so no extensive preparation is required. However, you are responsible for providing suitable space and environment for your complete system. Specifications for all requirements are listed in Section 2.

### **Safety , RFI and Data Communication Compliance**

The HP 260 Office Computer Series has UL 478 and CSA C22.2 No. 154, Data Processing Equipment regulatory approval. The HP 260 complies with IEC 380 and IEC 435. The HP 260 has been tested and found to comply with the limits for a CLASS A computing device pursuant to subpart J of Part 15 of FCC Rules. This system has the German RFI approval, FTZ License No. C-032/81. The HP 260 has the regulatory approval of the following countries for Data Communications: Germany, United Kingdom, Australia, France, Belgium, Finland, Switzerland and Sweden. The United States does not require regulatory approval. Any questions concerning regulatory agency compliance should be directed to your local Hewlett-Packard Sales Offices.

### **Local Codes**

In some localities, special codes and regulations may exist for the installation of computer sites. It is your responsibility to ensure that requirements of all local laws, regulations, and codes for mechanical, building, and electrical distribution systems have been met before the system is delivered.

### **Data Communications Equipment**

When data communications equipment, such as modems and connecting cables, is required, you are responsible for ordering and installing this equipment.

### **Selection of Principal Operator**

You should appoint someone to be the Principal Operator. The Principal Operator should not be confused with a system operator in an EDP (electronic data processing) department. The Principal Operator is an HP 260 user who is responsible for system operation, backups, maintenance, and scheduling. Initially, the Principal Operator is responsible for monitoring site preparation schedules, ordering computer supplies,



and scheduling training for system users. In the process, the Principal Operator should become familiar with the HP 260 system and be ready to start its operation once the system is installed.

## HP SERVICES

### Site Verification

On the day of installation (if you have not deleted installation), the CE will check that the site is suitable. There will be no problem with acceptance if this manual is followed. Sites failing to meet verification requirements, causing installation delays long enough to require a second visit, are subject to additional service charges. HP provides services during warranty and under a maintenance agreement if the specified requirements are met.

### System Installation

When your system arrives, your HP Customer Engineer will install it on a mutually-agreed-upon date. Section 4 details the tasks the CE performs during installation.

<b>NOTE</b>
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HP installation can be optionally deleted. If you deleted HP installation, refer to "Installing Your HP 260" (part number 45261-90006) for step-by-step installation instructions.

## WHAT SHOULD I DO NEXT?

The following guidelines describe general site planning. The suggested schedule is a summary of the HP 260 Pre-Installation Worksheet found in Appendix A-1. It should be used to monitor the progress of site preparation so that the site is complete when your system is delivered. Contact your Sales Representative to obtain an approximate delivery time for your system.

There are two items that require several weeks lead time. They are (1) arranging for an electrician to do electrical wiring and (2) placing orders for any needed data communications equipment. HP suggests that the suppliers of those services be contacted as soon as possible after order placement.

### Six Weeks Before Installation

1. Select a Principal Operator to be responsible for the successful installation and operation of your HP 260 system.
2. Select the location for your HP 260 system. Your HP CE will schedule a site planning visit with you and answer any questions about site preparation.

3. Plan the physical arrangement of the system and furniture.
4. Order consumable supplies, including discs, printer paper, and ribbons, plotter paper and pens. Set up a storage area.

## **Two Weeks Before Installation**

1. Schedule the date for system installation with your local HP 260 Customer Engineer.

## **At System Delivery**

1. Inspect each component shipment as it is delivered.
2. Call the HP Sales and Service Office when all equipment has arrived.
3. Have all of the equipment at the site location where it is to be installed.

## **At System Installation**

1. Have your Principal Operator present to assist and advise the HP CE during the installation process (if HP is installing your system).

## **WHERE DO I GO FOR HELP?**

### **Third Party (OEM) People Who Can Help**

Hewlett-Packard's Value-Added System Suppliers (or OEMs) -- are independent companies who as industry experts have developed quality applications for the HP 260 which represent a variety of business needs. If you have purchased an HP 260 computer system and/or applications software from a Hewlett-Packard Value-Added Supplier, they will provide consultation services and training on system operation and applications software (programs). In this situation, a Maintenance Agreement for hardware and the HP Software Support Program for standard HP software is available from Hewlett-Packard.

### **Local Hewlett-Packard People Who Can Help You**

To assist you in understanding the Hewlett-Packard organization, here is a list of HP service personnel. Each member of the HP team is well-trained and dedicated to maximizing your benefit from your HP 260.

## **Introduction**

**The HP Sales Representative -- Your Sales Representative coordinates HP resources to ensure on-time delivery and installation of the system. Call your Sales Representative to arrange staff training and to acquire additional system peripherals.**

**The Customer Engineer (CE) -- is the expert in computer and peripheral equipment service. The CE has the tools, parts, and skills to maintain your HP 260. If you purchase an HP Maintenance Agreement, the CE will provide hardware maintenance, repair, and problem diagnosis.**

**The Systems Engineer (SE) -- is the technical specialist in HP 260 subsystems and HP 260 BASIC. Your Systems Engineer offers training courses and technical consulting on HP 260 BASIC, utility programs, data base management, and system performance. If you sign up for the HP Software Support Program, the SE will provide software consulting and problem diagnosis.**

## **When You Need Assistance**

Unless you are an electrician and a computer engineer, you may need the assistance of an electrician, a Hewlett-Packard (HP) Customer Engineer, and HP Systems Engineer. These experts provide you with the technical knowledge necessary for your HP 260 site preparation and maintenance. Table 1-1 summarizes the technical tasks which require expert assistance and lists the expert capable of providing that assistance.

**Table 1-1. When You Need An Expert**

If you need...	Call your...
Line voltages measured	Electrician
Power line frequencies measured and recommendations for improvements made	HP Customer Engineer (HP CE)
Safety and isolated ground connections verified	Electrician
Advice on correct circuit breakers and wire sizes	Electrician
Power line noise levels measured	HP CE
Neutral-ground voltages measured during installation	HP CE
Verification that your mainframe outlets (those used for floor cleaners, etc.) are on separate circuits from your HP 260	Electrician
Recommendations about lightning protection	HP CE
Measurements and recommendations on radiated interference	HP CE
Answers to your questions concerning modems and modem options	HP Systems Engineer (SE)
Know which modems your HP 260 system supports	HP SE



## Floor Plan

You need to select a location to satisfy immediate and future requirements. You may want to select your computer site so that you can add more equipment as your needs expand.

HP recommends that you prepare a floor plan of your own HP 260 site showing the location and arrangement of your equipment. Provide enough space for people to work efficiently and for servicing equipment. The "Space Planning Kit," located in Appendix A, can help you plan the physical layout of your HP 260 site. The kit contains views of all the HP 260 equipment and a grid layout.

## HP 260 POWER SPECIFICATIONS

One of the most important considerations is the system electrical power requirements. The HP 260's power requirements are:

Line voltage	Single Phase 100/120/220/240V										
	<table><tr><th>Nominal</th><th>Range</th></tr><tr><td>100</td><td>90 to 105</td></tr><tr><td>120</td><td>108 to 126</td></tr><tr><td>220</td><td>198 to 231</td></tr><tr><td>240</td><td>216 to 254</td></tr></table>	Nominal	Range	100	90 to 105	120	108 to 126	220	198 to 231	240	216 to 254
Nominal	Range										
100	90 to 105										
120	108 to 126										
220	198 to 231										
240	216 to 254										
Line frequency	50 Hz or 60 Hz, $\pm 3.5\%$										
Safety ground	Required protection of operating personnel.										
Separate circuit breakers (suggested)	Available current cannot exceed 75% of circuit breaker rating.										
Power line transients	Power transients and interference less than specified value for the HP 260. (See Figure 2-4)										
Neutral-ground and ground-ground	Less than 4.0 volts peak to peak at each outlet with system components installed and powered on.										

## Why Power Requirements Are Important

The following section explains the purpose and function of the power requirements listed previously. Included here are the people capable of assisting you in meeting these requirements.

### Line voltage

The exact AC voltage at the wall outlet depends on your electric utility and your building power distribution. The electric utility provides voltage within a certain range up to your building. Any voltage drop inside a building is caused by the wiring between the electric utility hookup and the wall outlet.

Power voltages outside the specified operating range can cause intermittent system errors or shutdown. Low voltage is the most common power problem, and is usually caused by inadequate wiring.

### Frequency

Frequency usually depends on the local electric company. In rare cases, power is generated by a motor inside your building. This can cause intermittent system errors or CRT display jitter.

Your HP Customer Engineer can measure the power line frequency and make a recommendation if improvements are needed.

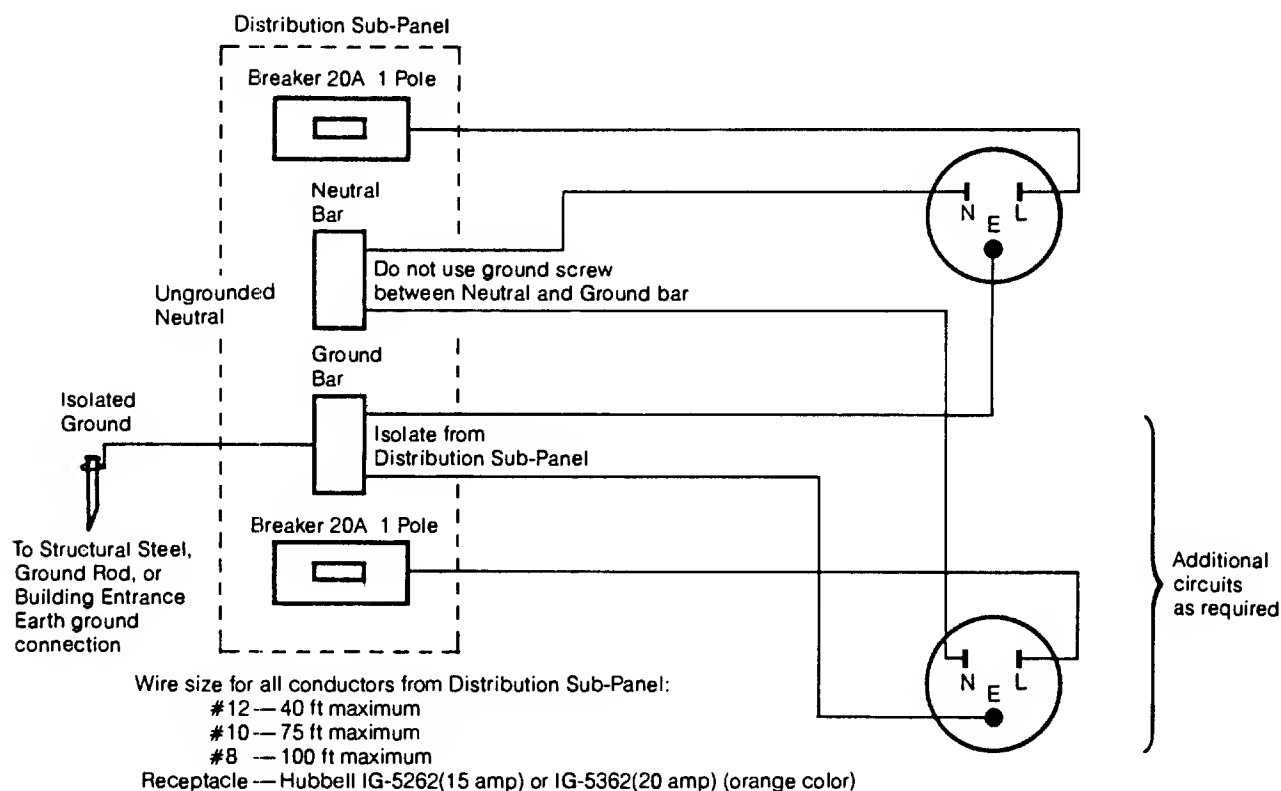


Figure 2-1. Electrical Circuit Diagram (U.S.A. and Canada)

Use the following table to calculate your HP 260 system's power requirements. Depending on the configuration (component combination) you use, the power requirements differ between systems. Have your electrician double check your calculations.

**Table 2-1. Worksheet for Power Requirement Calculations**

Equipment	Amperage Drawn (Depends upon local voltage)				Multiply by Number of Machines	Total Machine Amperage
	100V	120V	220V	240V		
HP 260 (45261D)	2.0	1.8	1.0	0.9		
7908P	5.2	4.3	2.3	2.1		
7911/7912P	8.4	7.0	4.0	3.5		
7941A/7945A	1.6	1.6	1.0	1.0		
7942A/7946A	2.3	2.3	1.3	1.3		
9133/34D	1.5	1.5	0.75	0.75		
2622D	1.2	1.0	0.5	0.5		
45262D	0.6	0.5	0.25	0.25		
293X Printers	3.0	2.5	1.36	1.25		
2686A/AB Printer	6.6	6.6	3.41	3.50		
2563A Printer	6.0	5.0	2.70	2.50		
2225DX Printer	0.48	0.4	0.23	0.20		
7470A	0.3	0.2	0.1	0.1		
7475A	0.48	0.4	0.22	0.2		
7550A	1.3	1.1	0.6	0.55		

### Dedicated Circuits

Separate circuit breakers for the system are suggested, but not required. Separate circuit breakers insure sufficient power to avoid data errors, and isolate the system from any faulty equipment in the room.

Circuit breakers are rated in amperes. In the U.S., typical circuit breakers are rated at 15 or 20 amperes. The ampere load in each circuit should allow a margin for startup and surge currents caused by the system. Refer to Table 2-1.



## Preparing for Installation

### Safety Ground

The green-wire ground (green/yellow in Europe) serves the dual function of safety and reference ground. As a safety ground, this wire meets requirements for any electrical equipment as protection for the user. As a reference ground, the green-wire ground acts as the electronic base point for the computer.

The green-wire ground is connected to the metal frame of each system component to protect the operator against equipment malfunction, and make the equipment resistant to a catastrophic event such as a lightning strike. To preserve this protection, plug the system only into wall outlets that have ground connections. Be sure that the green-wire ground is connected from the outlet to the distribution sub-panel where the circuit breaker is installed.

An HP 260 operating as a total system requires interface communication between the mainframe and all peripherals. As a result all devices within the system (except workstations or terminals connected via current loop or through modems) must have a common (single point) system reference ground. If this is not done, false signals can be generated between devices and can cause intermittent system failures. Also, the system isolated ground must be "quiet," other electrical devices such as copying machines, arc welders and air conditioning motors cannot be connected to the computer system ground. Therefore, the computer system ground is electrically isolated until it reaches the main building entrance earth ground.

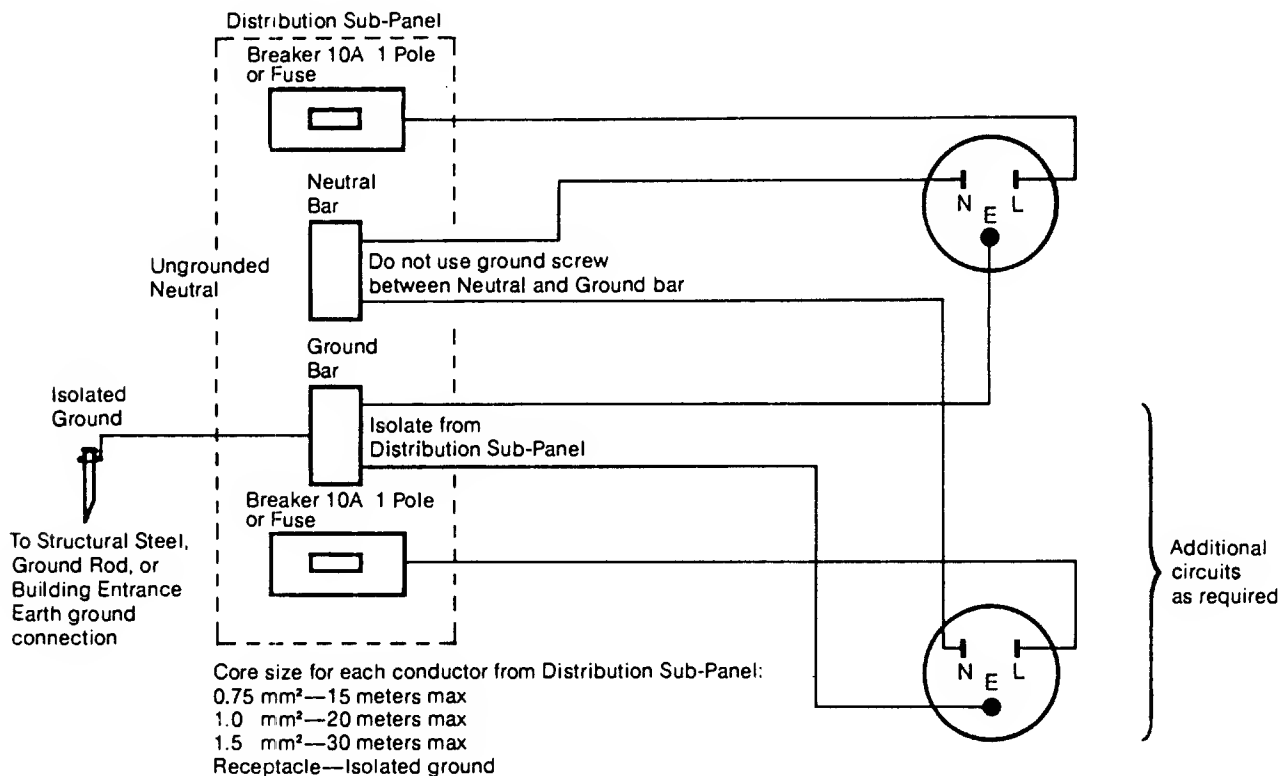


Figure 2-2. Electrical Circuit Diagram (Other Countries)

To meet the requirements for safety and reference ground, the ground wires for all of the outlets used by the computer and peripheral devices must be connected to the same ground bar (separated from the neutral) at the distribution sub-panel. A single ground wire should run from the distribution sub-panel to structural steel, ground rod (must be bonded to building entrance earth ground), building entrance earth ground connection, or an already installed computer system ground (see Figure 2-1 or 2-2). Conduit must not be used for computer system ground return, and all ground conductors must be insulated.

The HP 260 computer and its peripherals are equipped with three-conductor power cords which, when connected to appropriate power receptacles, ground the individual components of the system. Figure 2-3 shows the various power cords offered with the system.

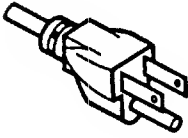
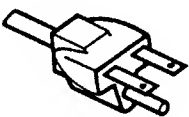
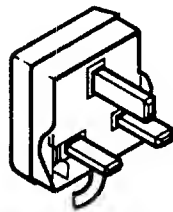
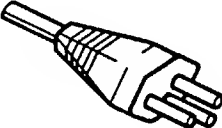

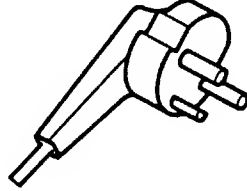
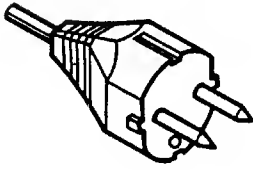
	<p>U.S.A., Canada, Japan, Mexico, Philippines, Taiwan Standard HP Part Number: 8120-2371 Length: 2.29m (7.5 ft) Rating: 125V, 13a, single phase NEMA5-15P</p>		<p>U.S.A., Canada, Japan, Mexico, Philippines, Taiwan Option 904 HP Part Number: 8120-0698 Length: 2.29m (7.5 ft) Rating: 250V, 6a, single phase NEMA6-15P</p>
	<p>Great Britain, Cyprus, Nigeria, Rhodesia, Singapore Option 900 HP Part Number: 31000-60057 Length: 2.29m (7.5 ft) Rating: 250V, 10a, single phase BS 1363A</p>		<p>Switzerland Option 906 HP Part Number: 8120-2104 Length: 2m (6.5 ft) Rating: 250V, 6a, single phase SEV 1011</p>
	<p>Australia, New Zealand Option 901 HP Part Number: 8120-1369 Length: 2m (6.5 ft) Rating: 250V, 6a, single phase AS C112</p>		<p>Denmark Option 912 HP Part Number: 8120-2956 Length: 2m (6.5 ft) Rating: 250V, 6a, single phase DHCR 107</p>
	<p>Belgium, Italy, France, Spain, Greece, Austria, Finland, Germany, Netherlands, Norway, Sweden, Saudi Arabia, United Arab Republic Option 902 HP Part Number: 8120-2857 Length: 2m (6.5 ft) Rating: 250V, 6a, single phase CEE7-VII</p>		

Figure 2-3. Power Cords

## Preparing for Installation

### Power Line Transients

Heavy electrical loads from nearby machinery or equipment, like elevators or electric welders, can cause intermittent system errors even if that equipment is on a different circuit breaker. For those conditions, you must provide a separate, completely independent circuit with isolated ground and circuit breaker coming directly from the main building power source. In cases of severe electrical noise, it may be necessary to install an isolation or power line conditioning transformer.

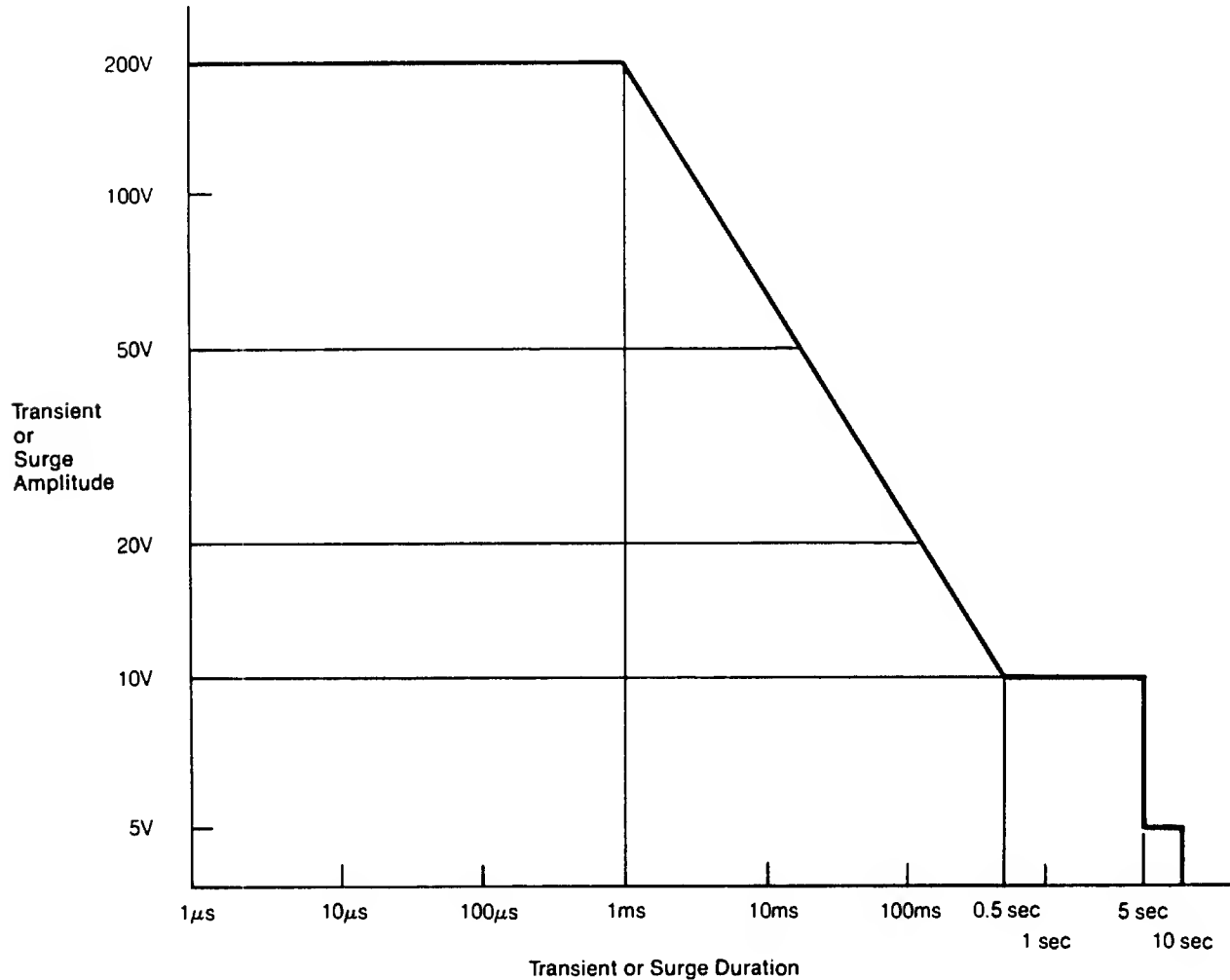


Figure 2-4. Allowable Transient and Surge Voltage Amplitudes

## Neutral-Ground and Ground-Ground Voltages

If the open-circuit neutral-ground (in the outlet) or ground-ground (between outlets) voltage is greater than 1V RMS this is an indication of (1) inadequate wire size, (2) absence of ground wire, (3) poor building distribution ground, or (4) imbalance of phases on a 3-phase power distribution system. The result can be intermittent system errors or system shutdown.

Measurements also must be made with the computer system installed and running. If the voltage exceeds the specification, 4V peak to peak, your electrician can determine which of the four conditions is the problem, and correct the situation.

Your HP Customer Engineer can measure the power line noise level (see Figure 2-4), and make the appropriate recommendation if power line improvement is needed.

## SOURCES OF ELECTRICAL INTERFERENCE

### Wall Outlets

Power outlets for building maintenance equipment (such as vacuum cleaners) must be wired on a circuit breaker separate from the computer. Connect the green-wire ground for these outlets to the normal building distribution ground (not computer system ground). If a separate circuit breaker and separate grounding is not provided, operation of janitorial equipment can induce electrical noise and cause abnormal operation of the computer system.

Your electrician can verify that outlets for maintenance equipment are on separate circuits.

### Lightning

In some locations, it is advisable to install lightning protection for personnel and the computer. The National Electrical Code, Article 280, describes the installation of lightning arrestors on power and communication lines in the United States. The principles of lightning protection and personnel safety are explained in the NFPA Handbook.

### Radiated Interference

Radiated interference causes a variety of computer problems; most commonly, disc read/write errors. The most common sources of radiation are airport communications and radar, two-way radio transmitters, and TV or radio signals. Hand-held transceivers (for example "walkie-talkies") produce the same effect as radio stations when used near computer equipment and should therefore be prohibited from the areas in which computer equipment is operated. Additionally, do not operate a computer in the path of a microwave transmission link.

HP 260 computer systems are designed to withstand radiation up to 0.5 volts/meter over a frequency range of 14KHz to 1 GHz.

If you suspect a problem with radiated interference, an outside consultant can perform radiation measurements and offer advice on shielding the system from external interference.

## ATMOSPHERIC CONSIDERATIONS

### Flammable Materials

Fundamental safety precautions should be taken. Minimize potential sources of damage. Do not install the HP 260 where there is a fire hazard from flammable gases, liquids, or dust.

### Contaminants

Airborne particles of a certain size or hardness may scratch the coating on the disc drive head causing premature disc wear and/or data errors.

The most common contaminants are dust, smoke, ashes, eraser crumbs, salty air, and food. Solvent vapors, such as those from liquid spirit duplicating equipment, wet process copiers, and volatile liquids, can soften disc coatings over a period of time. To prevent excessive wear, avoid bringing these contaminants into contact with your computer.

### Temperature and Humidity

Operating temperature and humidity requirements are shown in Figure 2-5.

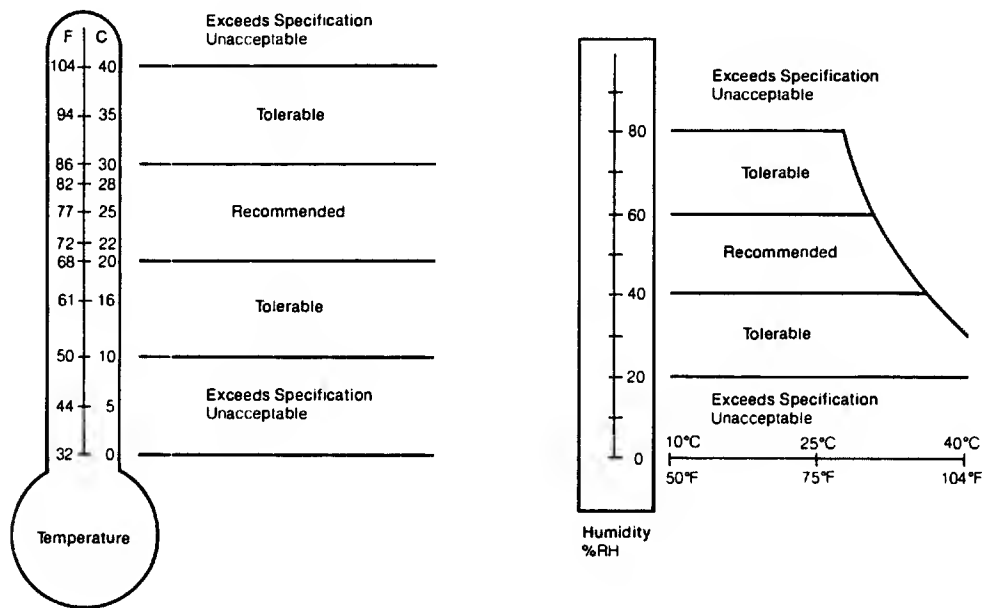


Figure 2-5. Temperature and Humidity Requirements

Higher operating temperatures considerably increase the failure rate of electronic circuitry. At 32 degrees Celsius (90 degrees Fahrenheit), HP statistics show a 25% higher failure rate of components than operating at 25 degrees Celsius (77 Fahrenheit).

Table 2-2. Calculation of Heat Output by Machine Type

HP 260 Machine Type	Watts	BTU/hr	Multiply By Number of Machines	Equals Total Heat Output per Machine Type
HP 260 SPU (HP Product 45261D)	230	785		
7908P Disc Drive	370	1260		
7911/7912P Disc Drive	700	2593		
7941A Disc Drive	85	290		
7942A Disc Drive	120	410		
7945A Disc Drive	85	290		
7946A Disc Drive	120	410		
9133D Disc Drive	125	425		
9134D Disc Drive	125	425		
2563A Printer	230	784		
2686A/AB Printer	850	1190		
293X Printers	225	768		
2225DX Printer	8	27		
2622D Workstation	65	220		
45262D Video Workstation	65	220		
7470A Plotter	25	85		
7475A Plotter	35	119		
7550A Plotter	100	341		

## Preparing for Installation

As a guideline for the temperature environment, Figure 2-6 indicates the temperature rise in the area you select, depending upon the room size and system heat output. Determine the new office temperature by adding the existing office temperature and the temperature rise taken from the graph. (Readings for existing temperatures should be taken near the floor in the approximate area where the equipment will be located.)

If you intend to operate the HP 260 on weekends, when the building temperature might waver, check the temperature and humidity of the site before operating the equipment. Auxiliary air conditioning (or heating) might be required to prevent damage to the equipment. If necessary, use an inexpensive thermometer and humidity gauge to monitor your site.

The HP 260 system is air-cooled. Fans circulate cool air through the system and discharge warmer air into the room. Each component must have 1 meter (3 feet) of free space to allow warm air to dissipate properly. Avoid extremes in relative humidity. High humidity can cause malfunctions in the disc drive or improper feeding of printer paper, while low humidity aggravates static electricity problems causing disc wear and possible memory problems.

Especially during dry and cold weather, carpeting is a source of static electricity. Ways to reduce static electricity include:

- Use of room humidifier.
- Use of grounded floor mats in front of the system.
- Use of anti-static spray on the carpet. Spray is not recommended because it can seep into the system and coat the circuitry. If spray is used, turn off and cover the system before applying it.

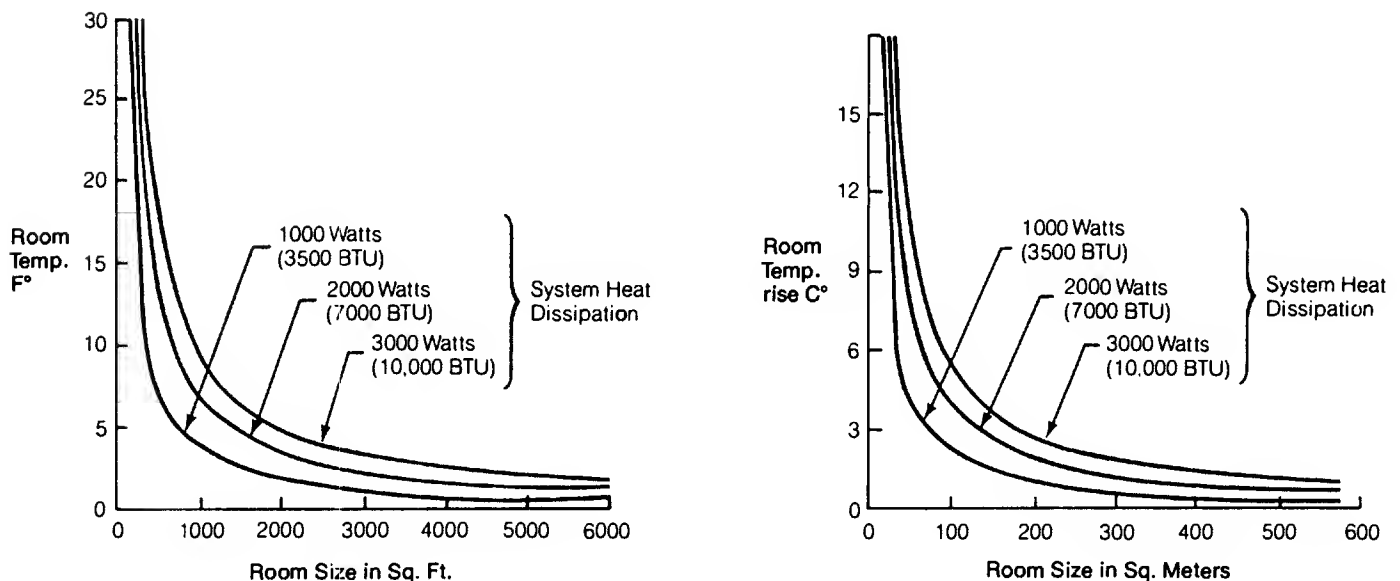


Figure 2-6. Room Temperature Rise

## Connection Cables and Power Cords

Data communication cables (such as RS-232-C) connect the HP 260 to its peripheral equipment. When planning the physical layout of your HP 260 site, consider the functional and aesthetic effects of the cables and power cords.

To avoid safety hazards and damage to cables, do not lay cables across entrances, aisles, traffic paths, or under carpeting. When planning system layout, remember that cable routing usually requires that cables be longer than the distance between components.

U.S. and Great Britain power cords are 2.29 meters in length (7.5 ft). All other power cords are 2 meters long (6.5 ft).

### CAUTION

Never use an extension cord for power; it can be a safety hazard.

All cables and power cords connect to the back of the equipment. Therefore, try to position the equipment along walls, near power outlets, so that cables are accessible but out of the way.

## HP-IB Cables

The Hewlett-Packard Interface Bus (HP-IB) allows system components to communicate with each other. It is analogous to a party line telephone system in which several people share a single line. In the HP 260 system, the HP-IB cables connect the disc memory devices and printers with the System Processing Unit (SPU).

In Figure 2-7, you can determine how much cable is shipped with your particular system configuration and recommended configurations. (You do not have to locate your system components in the same physical locations as shown in the examples.)

## COMMUNICATIONS

Either a cable or telephone equipment (asynchronous or synchronous modem) is used for communication between terminal equipment and the computer. The following information will help you plan and install your communications equipment. Remember that you must have all communications equipment and extension cables installed before the system is installed.

## Asynchronous Serial Interface (ASI)

The Asynchronous Serial Interface (ASI) is capable of communicating with supported terminals, printers, and plotters via an RS-232-C data link, using either a direct hardwired connection or modems. The EIA RS-232-C standard defines the mechanical/electrical characteristics for devices which can connect to the ASI interface. The standard does not specify the protocol (handshaking sequences, control line use, or control character sequences). Hewlett-Packard supports operation of the RS-232-C data link only with



## Preparing for Installation

the specific devices shown in Figure 2-8. Any changes in supported modems and options are reported in the Configuration Guide, which is available from your HP Sales Representative.

Device	External length of cable supplied (meters)
HP 260 SPU	0
HP 7908P Disc	2
HP 7911P/7912P Disc	1
HP 7941A/7945A Disc	1
HP 7942A/7946A Disc	1
HP 9133D/9134D	0
HP 9895A Disc	0
HP 293X Printers	0
HP 2563 Printer	2

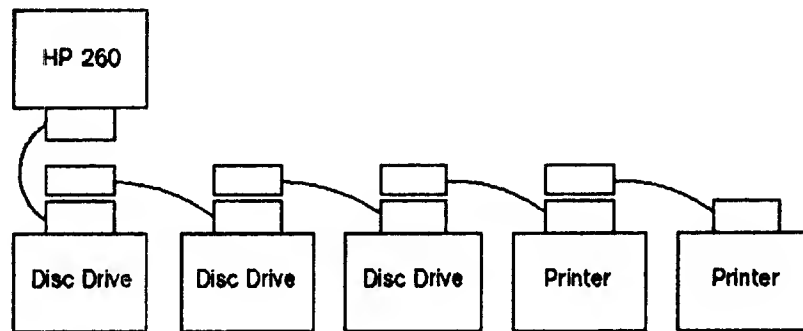


Figure 2-7. HP-IB Cabling Configuration

Figure 2-7 shows the most reliable configuration, especially in larger configurations.

You can determine the specific cable lengths between any two devices yourself as long as the total cable length on the system does not exceed that supplied with the system peripherals. It is recommended that the cable lengths are kept as short as possible. If you need additional cable length, contact your HP Customer Engineer to ensure that the length conforms to HP-IB specifications.

Do not connect two HP-IB cables together. For example, if a two-meter cable is needed between devices use one two-meter cable. Do not connect two one-meter cables together.

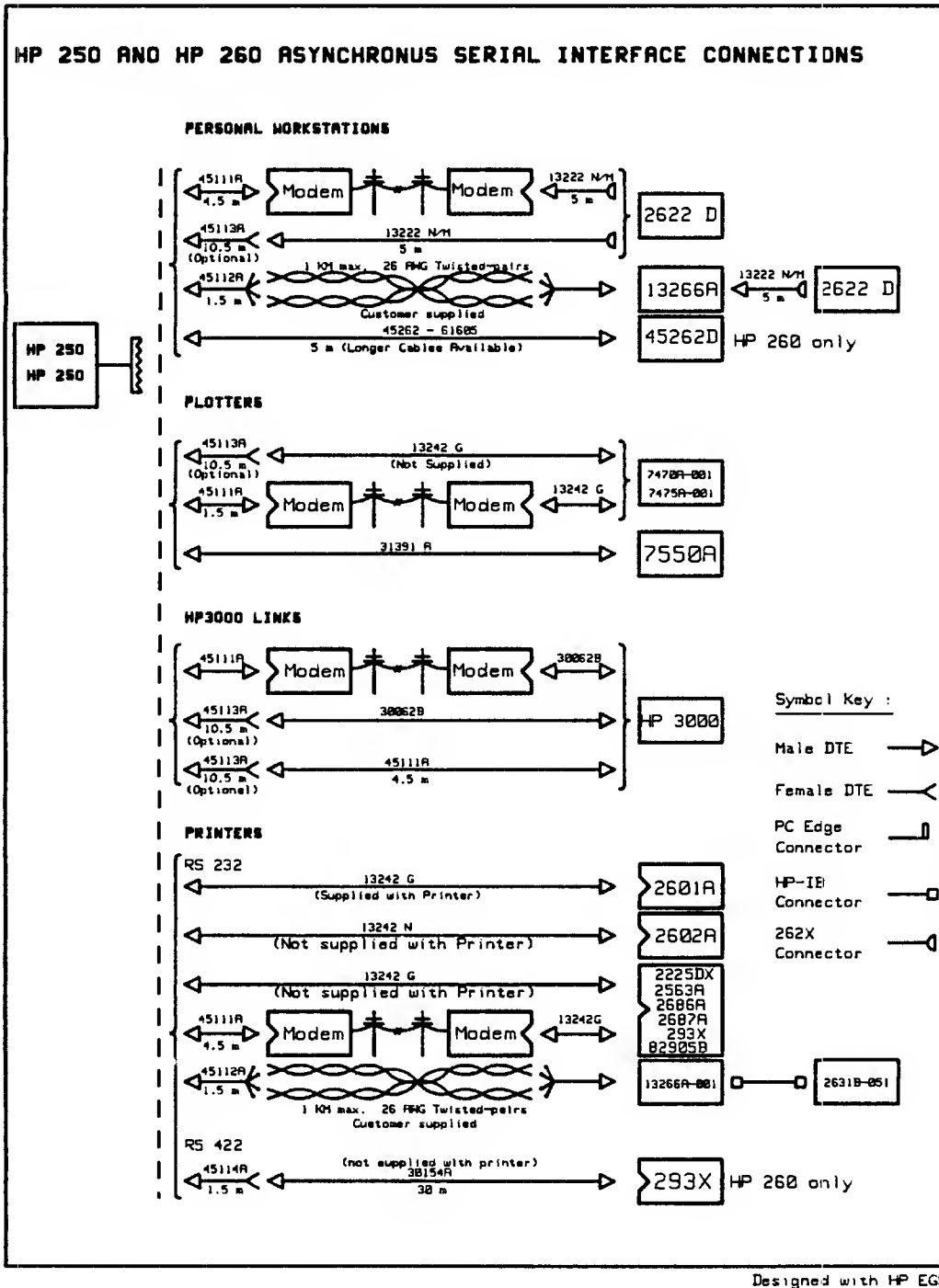
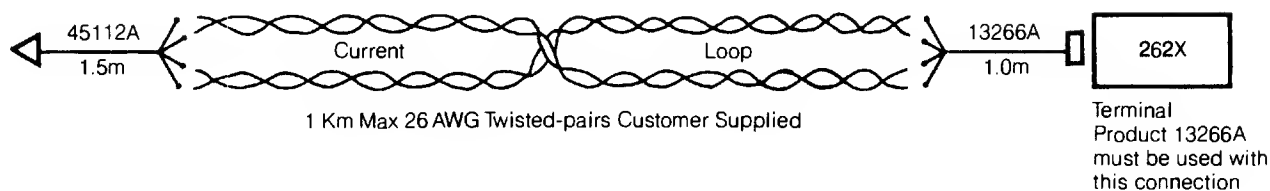
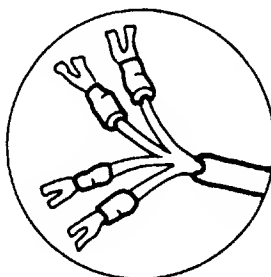
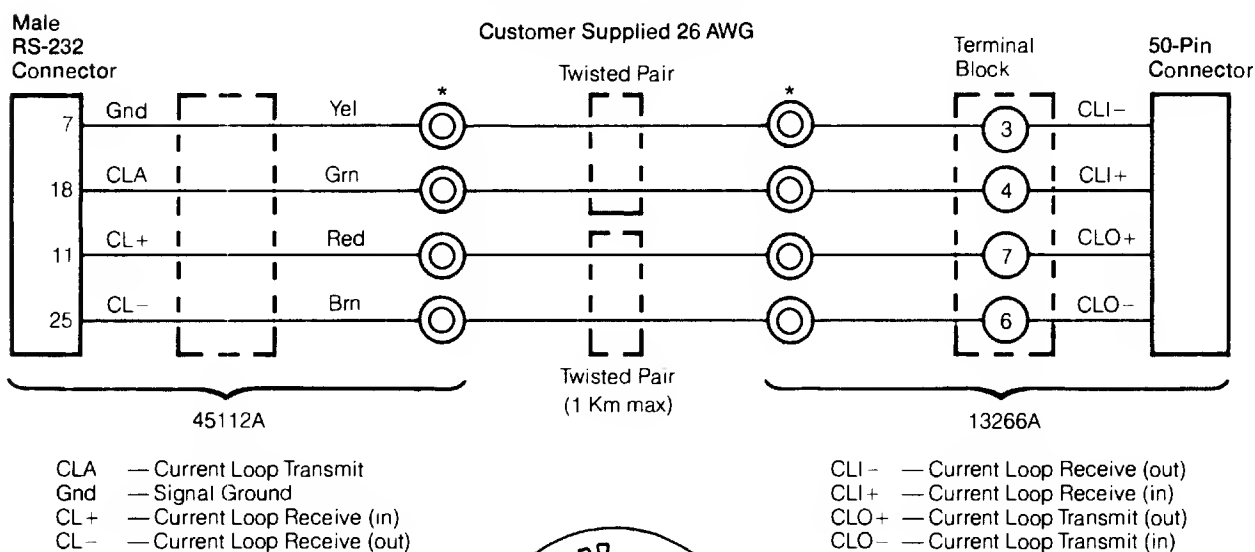


Figure 2-8. ASI Cable Connection

262X Terminal Connected to ASI with Current Loop Connection

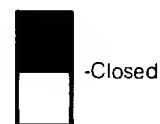
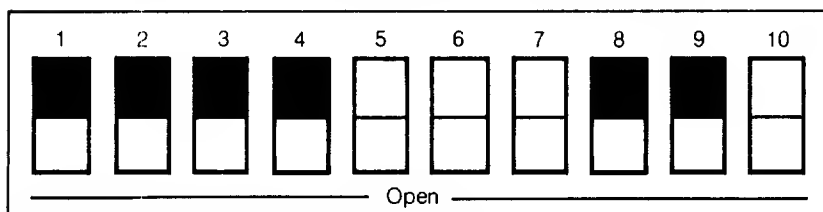


Cable Wiring for Current Loop Connection



\*Detail of cable end:

10-Position Rocker Switch Setting. Inside 13266A POD

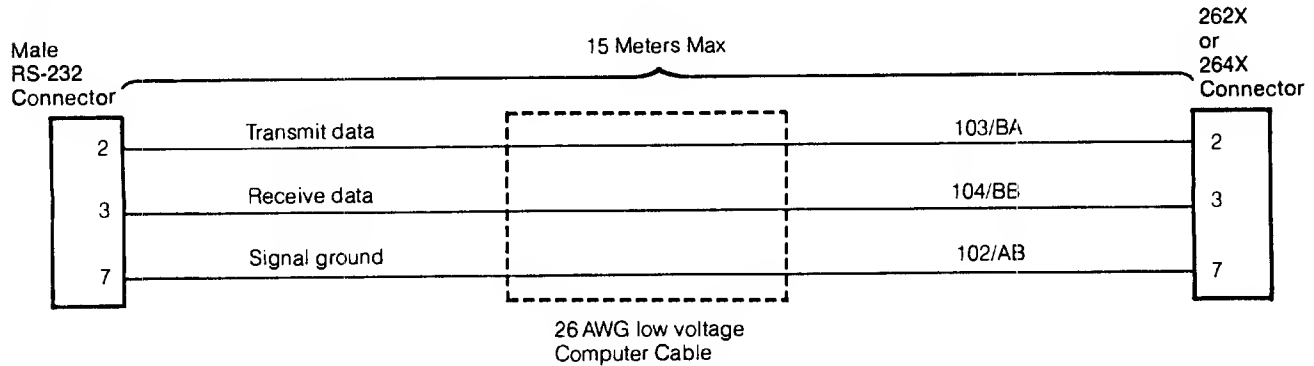


Note: Self-test switch should be in normal position.

Figure 2-9. ASI Current Loop Connections (262X Terminals)

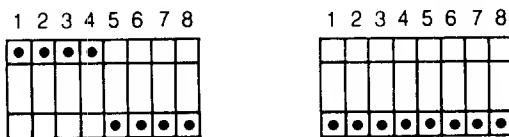
If you need to fabricate your own three-wire data communication cable Figure 2-10 shows the details on making the cable and all required connections. Remember if you make your own cable it is not supported by Hewlett-Packard.

If you locate an HP 262X terminal further than 15 meters (50 ft.) from the computer without using a modem, a current loop connection must be used for distances up to 1 kilometer (0.6 mile).



Item	HP Part No.	Description	Alternate Source
RS-232 Connector Kit	5061-2405	Includes male and female RS-232 Connectors (1 each)	
264X PCA Hood Connector Kit	5061-1340	Includes one 25-pin Connector	
262X Connector Kit	5061-2412	Includes one 50-pin Connector	Amphenol 57-30500
Connector Cable	8120-1950	12 conductor, shielded	U.L. style 2560
	8120-2398	16 conductor, shielded	U.L. style 2560

Note to Installer: On HP 260 Computer, port switch configuration is



or jumper configurations 1-10 are A's on RS-232 Connector Board Assembly.

**Figure 2-10. Fabricating Your Own Three-Wire Cable**

## Asynchronous Modems for ASI

The HP 260 ASI supports only the modems with the defined straps and options listed in Table 2-4. Because the actual connection and control of an RS-232-C data link can be and is broadly interpreted HP can support only those modems which we have tested. If you have questions concerning modems or modem options, please contact your local HP Systems Engineer (SE) or your Value Added Systems Supplier (OEM).

**Table 2-4. HP Supported Asynchronous Modems**

Data Set	Baud Rate	Type of Line
Bell 103J	300 Baud	Switched, Full Duplex
Bell 212A	300/1200 Baud	Switched, Full Duplex

Required feature configurations for the Bell 103J Data Set follow:

### Bell 103J Data Set

Feature	Required Configuration
Receive space disconnect	Yes
Send space disconnect	Yes
Loss of carrier disconnect	Yes
CC indication	Early
CB and CF indications	Common
CC indication for analog loopback	On
Fail safe of CN circuit	Off
Automatic answer	Yes
Common grounds	Yes

## Bell 212A Data Set

Option	Feature	Required Configuration
A3	Disconnect Options	
	a. 2. Send space (OUT)	Yes
	b. 1. Receive space IN	Yes
	c. 1. Loss of carrier (IN)	Yes
B3	With automatic answer	Yes
C6	EIA interference and ground	Yes
	a. 1. DSR(CC) indication for analog loop (ON)	Yes
	b. 1. CTS (CB) and DCD (CF) indication (COMMON)	Yes
	c. 1. Signal ground to frame connection (IN)	Yes
	d. 2. Answer mode indication (CE) (OFF)	Yes
	e. Interface speed indication (OUT)	Yes
	f. Speed control (HS button)	Yes
	g. Interface controlled Remote Digital Loop (OUT)	Yes
	h. CN and TM Test Mode Assignments -CN Pin 18 + TM Pin 25	Yes
D8	Modes of operation	
	a. 1. 1200 baud asynchronous start/stop	Yes
	b. 2. Character length-10 bit	Yes
	c. 1. Transmitter timing-internal	Yes
	d. 2. Speed mode-dual (1200 or 300)	Yes
	e. 1. Receiver responds to digital loop (IN)	Yes
E10	f. 2. Interface speed indications (OUT)	Yes
	Make busy/analog loop (CN) circuit disabled (OUT)	Yes

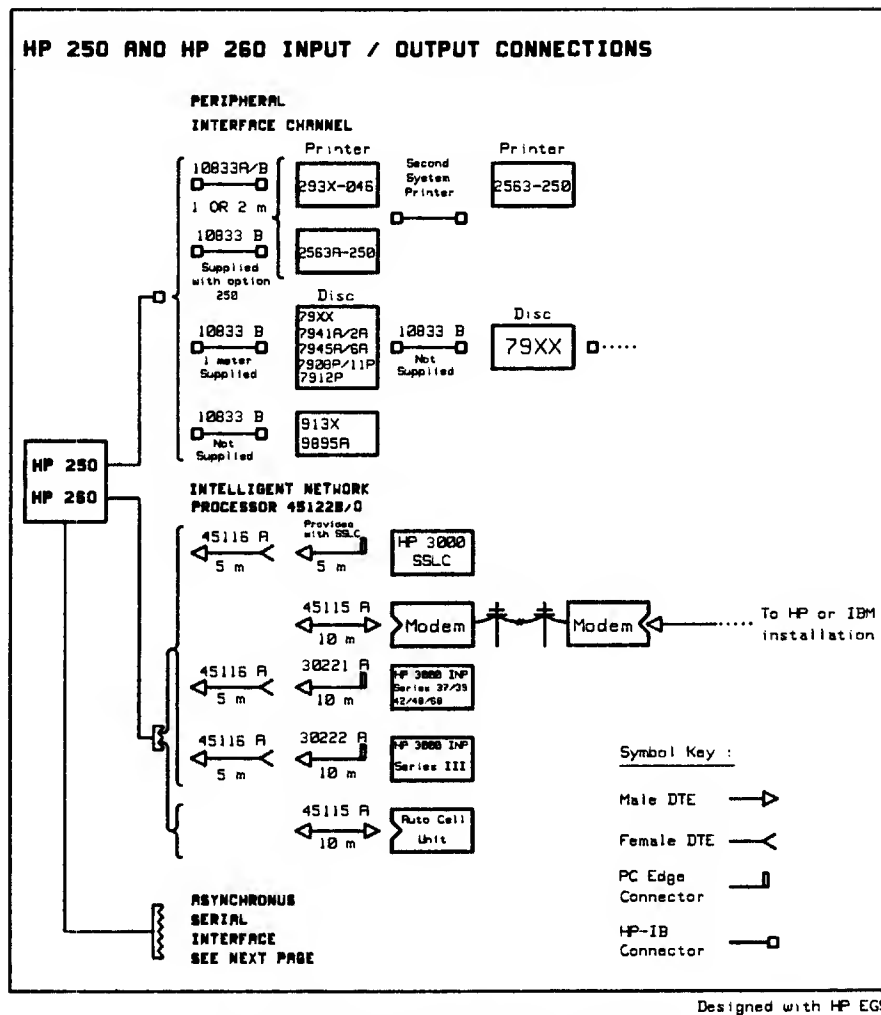


Figure 2-11. INP Cable Connections

## Intelligent Network Processor

The Intelligent Network Processor (INP) communicates with other computers via a synchronous data link using either a direct hardwired connection or modems. The EIA RS-232-C and RS-366 standards define the mechanical/electrical characteristics for devices which can connect to the INP interface. The standards do not specify the protocol (handshaking sequences) control line use, or control character sequences. Hewlett-Packard supports operation of the RS-232-C and RS-366 data links with the devices, modems, and modem options shown in Figure 2-11.

## Synchronous Modems and Auto Call Units for INP/260

The INP/260 supports only the HP and Bell modems with the defined straps and options listed in Table 2-5. Because the actual connection and control of an RS-232-C or RS-366 data link can be broadly interpreted, HP can only support those modems which we have tested. If you have any questions concerning modems or modem options, contact your local HP SE. Use the information in Table 2-5 to order and install your modems and cables.

**Table 2-5. Synchronous Modems and Automatic Calling Units**

<b>Modem/ACU</b>	<b>Bit Rate</b>	<b>Type of Line</b>	<b>Line Conditioning</b>
HP37230A	2400/4800	Twisted Pair	None
(Short Haul)	9600/19200 bps		
Bell 201C	2400 bps	Public (Switched)	C2 or C4
Bell 208A	4800 bps	Private (Leased)	None
Bell 208B	4800 bps	Public (Switched)	None
Bell 209A	9600 bps	Private (Leased)	D1
Bell 801C-L2	Autocall	Public (Switched)	None

Required feature configurations for the modems and automatic calling units are the following:

**Bell 201C Data Set (Switched)**

<b>Option</b>	<b>Feature</b>	<b>Required Configuration</b>
A1	Transmitter internally timed	Yes
B3	Without 801 Automatic Calling Unit	Optional
B4	With 801 Automatic Calling Unit	Optional
C5	EIA interface	Yes
D8	With automatic answer	Yes
E9	Automatic answer key-controlled	Optional
--	Grounding	AA to AB



**Bell 208A Data Set (Leased)**

Option	Feature	Required Configuration
A1	Transmitter internally timed	Yes
B3	Continuous carrier	Yes
C6	Continuous Request To Send	Yes
D7	One second holdover used	Yes
E10	Without new sync	Yes
F11	CC ON when analog loop is present	Yes
--	Grounding	AA to AB

**Bell 208B Data Set (Switched)**

Option	Feature	Required Configuration
A1	Transmitter internally timed	Yes
B3	Without 801 Automatic Calling Unit	Optional
B4	With 801 Automatic Calling Unit	Optional
C6	CC ON when analog loop is present	Yes
D8	With automatic answer	Yes
E9	Desk mounting	Either
E10	Rack or cabinet mounting	Either
--	Grounding	AA to AB

**Bell 209A Data Set (Leased)**

<b>Option</b>	<b>Feature</b>	<b>Required Configuration</b>
A1	Transmitter internally timed	Yes
C6	Slaved Transmitter timing by receiver	Out
D8	Elastic store out	Yes
E9	Continuous carrier	Yes
F12	Continuous Request to Send	Yes
--	Data Set Ready circuit	CC off
--	Grounding	AA to AB
--	With or without alternate service	Either

**Bell 801C-L2 Auto Call Unit (Switched)**

<b>Option</b>	<b>Feature</b>	<b>Required Configuration</b>
A2	Signal ground not connected to frame ground	Yes
B4	Call terminated through data set after DSS on	Yes
C5	ACR timer stopped DSS on	Yes
D8	ACR timing interval specified by customer	Yes
	1. 7 seconds	25-28 seconds
	2. 14-15 seconds	
	3. 25-28 seconds	

## SYSTEM SIZE AND WEIGHT

Table 2-6 shows the weights of all available system components. Use the crated weights and dimensions to determine where you will uncrate and transport the components in the building. The weight column is used to determine floor loading on the site that you have selected.

**Table 2-6. System Component Shipping Weights and Dimensions**

			<b>Crated</b>	<b>Dimensions</b>	
<b>Component</b>	<b>Weight</b>	<b>Crated Weight</b>	<b>Height</b>	<b>Width</b>	<b>Depth</b>
HP 260 (HP Product 45261D) System Processing Unit	20.5 kg (45.1 lb)	22 kg (48.4 lb)	235 mm (9.2 in)	325 mm (12.7 in)	530 mm (20.8 in)
2932A/ 2933A 2934/A Printers	20.4 kg (44.8 lb)	23.2 kg (51.0 lb)	185 mm (7.28 in)	600 mm (23.9 in)	365 mm (14.3 in)
2686A/AB Printer	32.0 kg (71.0 lb)	34.2 kg (72.0 lb)	564 mm (22.38 in)	508 mm (20.0 in)	408 mm (16.5 in)
2225DX Printer	3.36 kg (7.4 lb)	4.0 kg (8.8 lb)	195 mm (7.65 in)	365 mm (14.4 in)	350 mm (13.8 in)
7908P Disc Drive	73 kg (160.6 lb)	105 kg (231.0 lb)	660 mm (26.0 in)	965 mm (38.0 in)	940 mm (37.0 in)
7941A Disc Drive	10.0 kg (22.0 lb)	13.0 kg (28.6 lb)	560 mm (22.0 in)	520 mm (20.4 in)	360 mm (14.1 in)
7942A Disc Drive	16.0 kg (35.2 lb)	20.0 kg (44.0 lb)	560 mm (22.0 in)	520 mm (20.4 in)	430 mm (16.9 in)
7945A Disc Drive	10.0 kg (22.0 lb)	13.0 kg (28.6 lb)	560 mm (22.0 in)	520 mm (20.4 in)	360 mm (14.1 in)
7946A Disc Drive	16.0 kg (35.2 lb)	20.0 kg (44.0 lb)	560 mm (22.0 in)	520 mm (20.4 in)	430 mm (16.9 in)
9133D Disc Drive	10.0 kg (22.0 lb)	16.8 kg (37.0 lb)	622 mm (24.5 in)	609 mm (24.0 in)	394 mm (15.5 in)
9134D Disc Drive	8.64 kg (19.0 lb)	15.5 kg (34.0 lb)	622 mm (24.5 in)	609 mm (24.0 in)	394 mm (15.5 in)

Table 2-6. System Component Shipping Weights and Dimensions

			Crated	Dimensions	
Component	Weight	Crated Weight	Height	Width	Depth
2622D Workstation	23.0 kg (50.0 lb)	30.0 kg (65.0 lb)	533 mm (21.0 in)	610 mm (24.0 in)	610 mm (24.0 in)
45262D Video Monitor	8.5 kg (18.7 lb)	10.0 kg (22.0 lb)	420 mm (16.5 in)	410 mm (16.1 in)	430 mm (16.9 in)
45262D Keyboard and Audio Interface Unit	6.0 kg (13.2 lb)	8.0 kg (17.6 lb)	310 mm (12.2 in)	320 mm (12.5 in)	570 mm (22.4 in)
7470A Plotter	6.1 kg (13.5 lb)	12.6 kg (28.0 lb)	1295 mm (51.0 in)	1219 mm (48.0 in)	838 mm (33.0 in)
7475A Plotter	9.1 kg (20.0 lb)	12.9 kg (28.5 lb)	668 mm (26.8 in)	483 mm (19.1 in)	305 mm (12.0 in)
7550A Plotter	16.3 kg (36 lb)	23.6 kg (52.0 lb)	838 mm (33.0 in)	360 mm (14.6 in)	724 mm (28.5 in)



## Media Storage

Store your flexible discs near the work area in a clean, dust-free environment similar to the computer environment. Extreme humidity or temperature differences between storage and working areas can cause warping of flexible discs.

If the storage and work areas cannot be kept at the same humidity and temperature, allow time for the media to reach the temperature and moisture level of the work area (typically one hour before use). The temperature change of flexible discs should not exceed 20 degrees Celcius per hour.

To maintain data integrity, do not place recorded media near magnetic fields, for example around motors, alternators, transformers, or other disc drives.

## Protection of Valuable Records

Safety precautions are suggested because your investment in equipment and data deserves protection. Protect your business records, magnetic media, and other information that is expensive or impossible to duplicate. Duplicate records, from which necessary information can be taken in case of an accident, should be maintained. Copies of vital data should be stored away from the computer area, normally in fireproof storage. A regular updating program is necessary to maintain the value of such duplicate data storage.

Because you are making a large investment, you should investigate obtaining electronic data processing insurance. EDP insurance policies can cover both hardware and software.

## Computer Supplies

The items most important to reliable operation of your system are the flexible discs. Through extensive testing, selection, and quality control, HP strives to provide high-performance flexible discs. But HP cannot cover damage caused by disc heads when non-HP media is used.

You should order your computer supplies at the time indicated on the Pre-Installation Worksheet. Necessary items for your system include printer ribbon, printer paper, and flexible discs. For information about computer supplies, consult the HP Computer Supplies Catalog and talk to your Sales Representative.

## Telephone

It is a good idea to locate a telephone with a long cord near your HP 260, so that you may easily consult with an HP Customer Engineer or System Engineer.



## PREPARING FOR SYSTEM ARRIVAL

### About Coordinated Deliveries...

Peripheral equipment made by Hewlett-Packard for the HP 260 is delivered directly to you from the location at which it is made. Hewlett-Packard coordinates the shipment of equipment from all locations so that all of your order arrives at approximately the same time. In some cases, factors beyond the control of Hewlett-Packard may cause delivery dates to vary. If you do not receive your entire order within a two-week period, notify your HP Sales Representative or Value-Added System Supplier, who will trace your order and complete delivery.

### Check for Shipping Damage

As each shipment arrives, check the carrier's packing list carefully to make sure that every item shipped by HP has been delivered. If there are missing items, notify the carrier immediately.

Before unpacking any equipment, inspect all containers for signs of damage that might have occurred during shipment. Some typical signs of shipping damage are dents, scratches, cuts, or water marks. If any damage is found, note on the packing list that there is "Apparent damage-subject to inspection" and arrange for the carrier's representative to be present when that item is unpacked.

Regardless of the circumstances, the HP CE will take immediate action to replace any damaged parts without waiting for the settlement of claims.

### Schedule the Installation

Once your complete system has been delivered, call the local HP Sales and Service Office to set an installation date. On this date, your HP Customer Engineer or the Value-Added System Supplier installs your system provided that you have not planned for self-installation.

### Unpack the Cartons

The cartons can be unpacked whenever it is convenient for you to do so; however, it is preferable to unpack the system on the day of installation. System installation by the Customer Engineer cannot be performed until the complete system has arrived. Instructions for unpacking the cartons are shipped with the HP 260 and each of its peripherals; unpacking instructions are attached to the outside of the cartons.

Locate the packing list (invoice) for each carton or crate that you unpack and make certain that you have received every item on the packing list. If something is missing, contact your HP Sales Representative immediately.



## System Installation Day

On installation day, providing you are not installing the system yourself, your HP Customer Engineer...

- verifies that the site has been prepared according to this manual,
- visually inspects all system components,
- performs turn-on procedures and makes all electronic and mechanical adjustments,
- executes standard HP diagnostics and tests,
- demonstrates how to start up and power down the system, and
- explains back-up procedures, preventive maintenance, and printer operation
- fills out the system installation report.

# APPENDIX A

## APPENDIX

### A

#### HP 260 Pre-Installation Worksheet

Timing	Activity	Date
6 weeks Before Installation	<p>Select the location for your HP 260. Use the Site Preparation Guide and Checklist to satisfy the physical requirements and to ensure that the site is ready when your HP 260 arrives.</p> <p>Assign a person to assume responsibility as the HP 260 Principal Operator.</p> <p>Plan the physical arrangement of your HP 260 and its supporting furniture. The Space Planning Kit allows you to plan the details before your system arrives.</p> <p>Order supplies that will be required for uninterrupted operation of your HP 260 (printer paper and ribbons, discs, tape cartridges etc.).</p>	
2 weeks Before Installation	<p>Schedule a date for the installation of your HP 260 with the local HP Customer Engineer. The date can be tentative based on the delivery dates received from HP or the companies transporting your equipment.</p>	
At System Delivery	<p>Inspect each shipment as it is delivered. Note dates and comments in the Shipment Schedule (A-2). Notify the HP Customer Engineer when your complete order has been delivered.</p>	
System Installation	<p>Arrange for the Principal Operator to be present to assist and advice the Customer Engineer throughout the installation process. After the computer is installed and tested, the CE will help make your computer operational by providing instruction and assistance.</p>	

**HP 260 Pre-Installation Worksheet (continued)**

<b>Equipment Name</b>	<b>Scheduled Ship Date</b>	<b>Arrival Date</b>	<b>Comments</b>
<b>HP 260 System Unit</b>			
<b>Printer(s)</b>			
<b>Terminal(s)</b>			
<b>Workstation(s)</b>			
<b>Disc Drive(s)</b>			
<b>Plotter(s)</b>			
<b>Data Capture Terminal(s)</b>			
<b>Bar Code Reader(s)</b>			

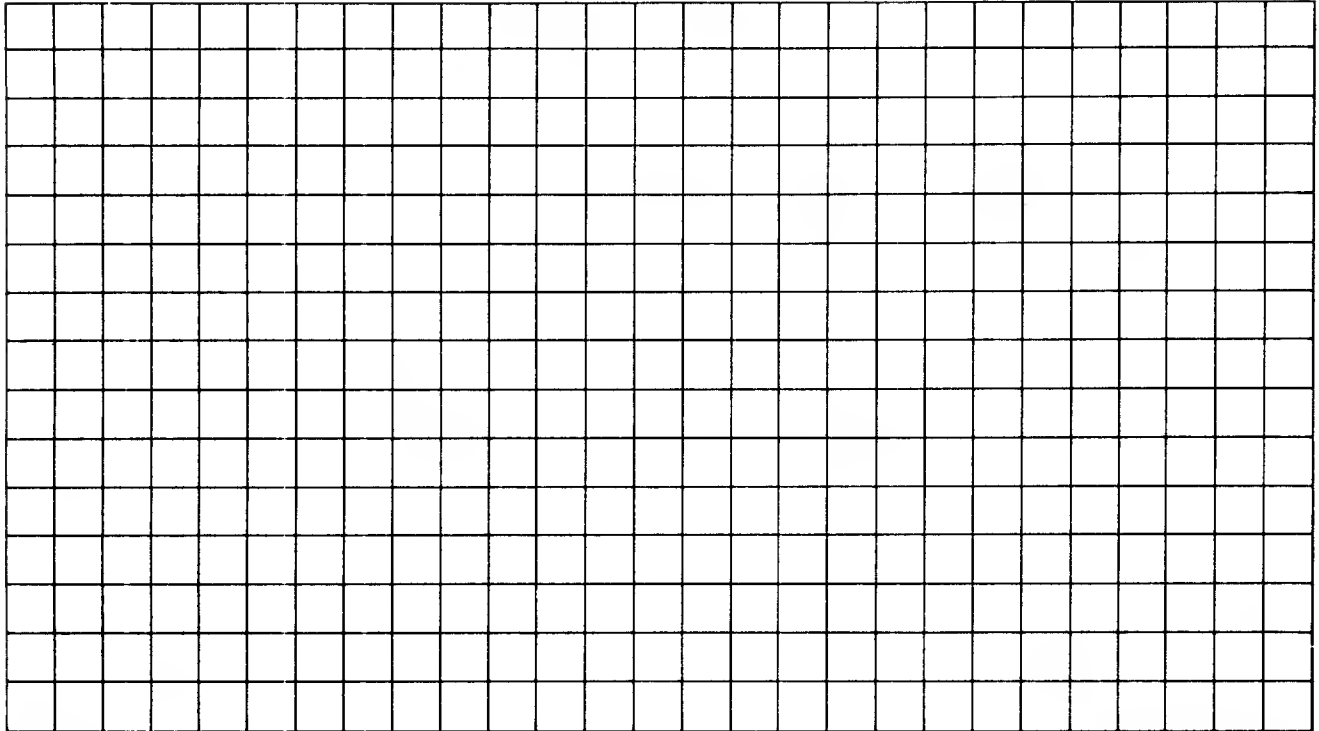
## HP 260 SPACE PLANNING KIT

The top views of the system components (see A-5) are drawn to scale and can be used for designing the floor plan of your HP 260. When cut out and used on a scale drawing of your computer site, the models can be moved around to help determine the best room arrangement. The next page is a sheet of grid paper drawn to the same scale. It can be used to prepare the scale drawing of your proposed HP 260 site.

### Instructions

1. On the grid sheet, draw the room (walls, electrical outlets, immovable objects, etc.) in which you plan to locate the HP 260.
2. Cut out the models required to represent the HP 260 system that you ordered. Include the office furniture that you will use.
3. Move the models of your system around on the grid to determine the best room arrangement. (Do not forget to allow room for maintenance in front and back of system and disc(s).)
4. Cabling is required between the HP 260 and each peripheral. Mark each cable's path and indicate its necessary length.

Space Planning Grid Sheet

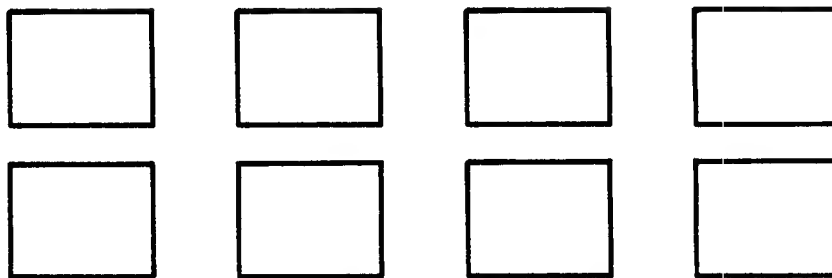


( $\frac{1}{4}$  in. = 1 ft.)

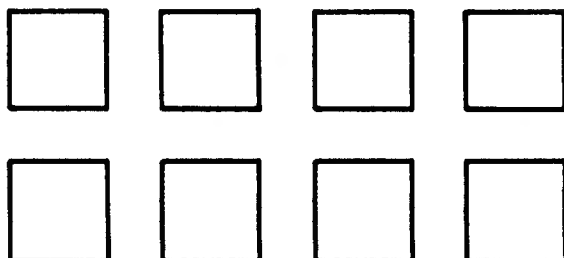
(6.35 mm = 304.8 mm)

Cut out the models required to represent the HP 260 system that you ordered. Include the office furniture that you will use.

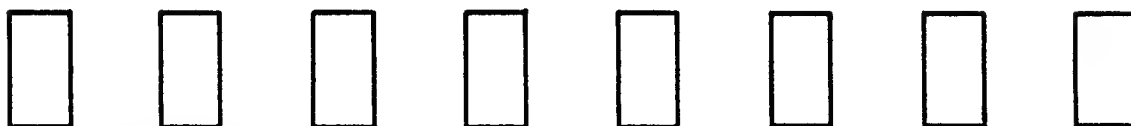
Workstation Table



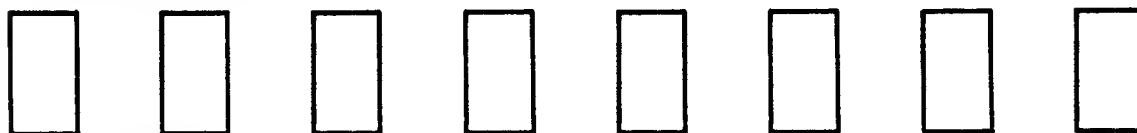
Plotter



Disc Drive



Mini-rack Cabinet



HP 794X Disc Drive



Printer



Terminal and Keyboard

